DRAFT RESIDENTIAL SOILS AND INERIOR DUST REMEDIAL ACTION WORK PLAN/FINAL DESIGN REPORT ANNOTATED OUTLINE – COMMUNITY SOILS OU

1.0 INTRODUCTION

- Briefly discuss 2013 ROD Mod.
- This RAWP/FDR will replace the FINAL CS OU Residential Soils RAWP/FDR dated July 19, 2002.
- This RAWP/FDR details both lead and arsenic remedial action (RA) activities applicable to the Residential Soils and Interior/Attic Dust Portion of the CS OU (Anaconda, Opportunity, and Regional Area).
- Lead cleanup will be managed on a component-specific basis; arsenic cleanup decisions will continue to be based on area weighted average calculations.
- Sampling and, where applicable, cleanup for both arsenic and lead will extend to a depth of 12 inches.

1.1 Purpose and Scope

- This RAWP/FDR does not address residential yards (sampling or RA) that have been remediated previously under the original CSOU residential soils program.
- Discuss original focus area and expanded focus area.
- Additional yard sampling will be prioritized based on existing sampling results showing exceedance of 400 ppm lead concentration.

1.2 Site Location and Description

- As outlined in the 2013 CS OU ROD Amendment, the Area of Concern is the Anaconda-Deer Lodge County Superfund Planning Area Overlay District (SPAOD).

1.3 Site History

1.4 Description of the Community Soils OU Selected Response Action

- Clean up all current residential soils that exceed the residential action levels of 250 parts per million (ppm) arsenic and/or 400 ppm lead on those properties that have not been previously remediated, through removal and replacement with clean soil and placement of vegetation or other landowner preferred landscaping (i.e. wood chips, gravel, etc.).

- Remediate interior/attic dust that exceeds the residential action levels of 250 ppm arsenic and/or 400 ppm lead through removal (professional cleaning service for interior dust or removal/encapsulation of attic dust). Interior/attic dust to be sampled only when requested by landowner; and only when an exposure pathway from an attic to living space is present. Only homes constructed prior to 1980 will be considered for dust sampling.

- Minimize potential for recontamination of yard/dust remediation by informing/providing a limited timeframe (i.e. 12 months) for landowner to abate non-mining sources of lead (e.g., lead paint) in advance of RA.

- In areas where specific site conditions dictate that soil removal is not implementable (e.g., topography, rock trees, etc.) or is otherwise not appropriate (e.g., large, rural properties), treatment or other measures (e.g., capping, tilling, etc.) can be taken to reduce metal concentrations below the respective action levels (250 ppm for arsenic and 400 ppm for lead) or to prevent exposure.

- Clean up all future residential soils at the time of development that exceed the residential action levels (250 ppm for arsenic and 400 ppm for lead), through the Anaconda-Deer Lodge County (ADLC) Development Permit System (DPS).

1.5 Community Soils OU Remedial Action Objectives

- The primary objective of the Anaconda and Regional Residential Soils portion of the CS OU RA is to remediate previously unremediated residential yards to below the residential action levels of 250 ppm arsenic and 400 ppm lead to a depth of 12-inches using removal and replacement of soil, permanent covers, and/or ICs to provide for appropriate protection of human health and the environment in a manner consistent with the 1992 CS OU ROD and the 2013 CS OU ROD Amendment.

- Residential soils include yards, parks, school grounds, or other play areas. Also included are barren driveways, unpaved alleys, or other common areas adjacent to yards which may contribute to the contamination of yards and which may be frequented by children.

- All soil and interior/attic dust sample results will be recorded in the GIS for use by regulators, prospective home buyers, lenders, contractors, and other interested parties.

2.0 CLEAN-UP ACTION LEVELS

As detailed in the 2013 CS OU ROD Amendment, clean-up action levels will be as follows:

- Residential Soils (Arsenic) – Clean up As > 250 ppm.

- Residential Soils (Lead) – Clean up Pb > 400 ppm.

- Interior/Attic Dust (Arsenic) – Clean up As > 250 ppm.

- Interior/Attic Dust (Lead) – Clean up Pb > 400 ppm.

3.0 BASIS OF DESIGN

- Will attempt to sample all previously sampled residential properties (with the exception of those previously remediated) with existing data showing exceedance of 400 ppm lead concentrations; other residential properties within the SPAOD will be sampled only when requested by the landowner.

- The remedial design (RD) for residential soils presented in this RAWP/FDR is based on the 2013 CS OU ROD Amendment as well as the guidelines and requirements of the Superfund Lead-Contaminated Residential Sites Handbook.

- Currently, two CS OU lead data sets exist. The first is a screening level quality set of data that was collected under the original CS OU remedial action sampling activities. This XRF data was not used in the original RA design and therefore was not put through proper QA / QC procedures. This data will be used to prioritize residential yards for sampling, but will not be used for determining RA. The second data set was collected by EPA in 2007. Similarly, this data set will be used to prioritize residential yards for sampling, but will not be used for determining RA based on the random spatial locations and depth intervals represented by the data.

- During RA sampling activities, sampling crews will note any areas on adjacent properties that are readily available and frequented by children. If any such areas are noted, access agreements will be pursued and RA sampling will be conducted.

- When requested by the resident, only sample interior/attic dust in homes constructed prior to 1980 and that have an exposure pathway to attic.

- Interior dust RA will consist of thorough cleaning by professional cleaning service.

- Attic dust cleanup will consist of negative pressure dust removal/disposal followed by encapsulation.

- Homes with suspected exterior lead paint will be identified by sampling crews, and referred to ADLC for follow up.

4.0 PROJECT MANAGEMENT AND COMMUNICATIONS

4.1 Lines of Authority, Communication and Coordination

4.2 Project Meetings

5.0 FINAL DESIGN

5.1 Residential Soils Final Design

The significant elements of the Final Design for the Residential Soils RA include the following elements:

- Development of a Sampling and Analysis Plan / Quality Assurance Project Plan (SAP/QAPP) for RA Data Collection Activities – Sample each component at 0-6" and 6-12" depth intervals.

- Performing RA sampling for both arsenic and lead on all residences with existing data showing exceedance of 400 ppm lead concentration with the exception of those residences where remedial action has already been completed. Existing screening level quality data with lead results above 400 ppm will be used to prioritize residences on the sampling schedule.

- Design of yard removals and subsequent soil and/or aggregate covers – 12" maximum depth of removal in accordance with the EPA lead handbook.

5.2 Interior/Attic Dust Final Design

The significant elements of the Final Design for the Interior/Attic Dust RA include the following elements:

- Development of a SSAP/QAPP for RA Data Collection Activities.

- Receipt of landowner request to sample residence.

- Determination that residence meets sampling criteria (i.e. direct pathway to attic [damaged ceilings, etc.], it is determined that residents use the attic frequently, or there is a plan for remodeling involving the attic or other major sources of dust [wall demolition]). Regardless of the previous criteria, no sampling will be conducted on residences constructed after 1980.

- Performing RA sampling for both arsenic and lead dust that meet the sampling criteria.

- Interior dust RA will consist of thorough cleaning by professional cleaning service.

- Attic dust cleanup will consist of negative pressure dust removal/disposal followed by encapsulation.

5.3 Exterior Lead Paint

- Homes with suspected exterior lead paint will be identified by sampling crews and referred to ADLC for follow up.

5.4 Area of Remedial Action

- Discuss original focus area and expanded focus area.
- Under the 2013 CS OU ROD Amendment, the area of concern for both soil and interior dust sampling efforts is the Anaconda-Deer Lodge SPAOD. Attempt to sample all residential properties with known lead exceedances unless they were previously remediated. Additional properties only sampled when requested by landowner.
- Screening level quality data exists and will be used to prioritize those residences with lead data exceeding 400 ppm lead soil concentrations.
- All other residences within the Anaconda-Deer Lodge SPAOD will be sampled on an opportunistic basis (sampling by request).

5.5 Landowner Communication

- Access letters will be sent to residential landowners to be sampled. If site access is refused, the property will be entered into the GIS.
- Upon completion of CS OU RA sampling, landowners who granted access will receive a "No Action" or a "Remedial Action" letter containing all sample results. The "Remedial Action" letter will provide the arsenic and lead soil results and indicate that further RA is required on the property. An Individual Site Work Plan (ISWP) outlining sample locations and proposed remedial action activities within the residential yard will be attached to the "Remedial Action" letter for landowner concurrence.

5.6 RA Data Collection Activities

5.6.1 Residential Soil Sampling

- All residential soil sampling will be conducted in accordance with the project SAP/QAPP.
- All residences that were previously remediated will be excluded from further RA sampling activities.
- Existing screening level quality lead data will be used to prioritize those residences with lead soil sample results above 400 ppm for RA sampling.
- During RA sampling activities, sampling crews will note any areas on adjacent properties that are readily available and used by children. If any such areas are noted, access agreements will be pursued and RA sampling will be conducted.

- RA samples will not be collected from under tree canopies. If the ISWP calls for remediation around the tree, hand work will be performed directly beneath the canopy.

- Two separate composite samples will be developed for each yard component. The first composite sample will consist of subsamples from the 0 to 6-inch depth interval. A second composite sample will consist of subsamples from the 6 to 12-inch depth interval.

- Subsamples will be collected from within the dripzones of residences. These subsamples will be included in the nearest component's composite sample. If the component's composite sample exceeds either the arsenic or lead action level, the drip zone will be remediated along with the remainder of the component. However, this only applies for arsenic when the area-weighted average of the entire yard exceeds the action level. Distinct "drip zone" samples will not be collected.

- Subsamples will be collected from within a rock garden associated with any residences. These subsamples will be included in the nearest component's composite sample. If the component's composite sample exceeds either the arsenic or lead action level, the rock garden will be remediated along with the remainder of the component. Distinct "rock garden" samples will not be collected.

- Vegetable gardens will be treated as an independent component and sampled accordingly.

- Either the property boundary or a smaller natural boundary within the yard/lot will be used to establish the extent of the sample area. The yard area shall be defined as a maximum of 125 feet from the center of the residence, unless a property boundary or natural barrier (e.g., fence, hedge, tree line, abrupt change in grade, etc.) is encountered at a distance less than 125 feet.

- The composite samples generated during RA sampling will be submitted to a laboratory for arsenic and lead ICP lab analysis.

- Residential yards where arsenic area weighted average results are less than 250 ppm arsenic and all yard component lead results are less than 400 ppm lead will not be further evaluated under the CS OU RA activity.

- Residential yards where arsenic area weighted average results are greater than or equal to 250 ppm arsenic and/or any yard component lead results are greater than or equal to 400 ppm lead will be subject to remedial action under the CS OU. Individual Site Work Plans (ISWPs) will be developed for affected residential yard components.

5.6.2 **Interior / Attic Dust Sampling**

- All interior/attic dust sampling will be conducted in accordance with the project SAP/QAPP.

- Interior/attic dust sampling will only be conducted when requested by the landowner and 1 of the following conditions is met: there is a direct pathway to the attic that could lead to exposure to residents; it is determined that residents frequently use the attic and therefore could have potential exposure; or if residents have a remodeling plan that involves exposing the attic or other potential sources of significant dust (wall demolition, etc.).

- No interior/attic dust sampling will be conducted on home built after 1980 (the year the Smelter ceased operations).

5.7 Design and Implementation of RA Remedy

5.7.1 Design and Implementation of Residential Soils RA Remedy

- ISWPs will be developed for specific areas requiring RA and will be provided to the EPA for review and approval prior to construction.

- Prior to performing Residential Soils RA, Atlantic Richfield will coordinate with ADLC and landowners to address deteriorating exterior lead paint within the work site that have the potential to recontaminate remediated soil areas. If agreed to by all parties, residential soils RA can be delayed up to 6 months, to allow the landowner sufficient time to address lead paint issues. If exterior lead paint is not addressed within that time frame and yard cleanup occurs, AR will not be required to return to that particular yard for additional cleanup if re-contaminated.

- Information on soil arsenic and lead concentrations and corresponding locations/survey data will be maintained in the GIS.

5.7.1.1 Soil Covers

- Soil covers and vegetative caps will consist of up to 12 inches of backfill (depending on the depth of contaminated soil removal)

- The borrow soils to be used as general backfill in residential yards that receive sod application under this RA will meet cover soil suitability criteria.

- Sod will be placed over the backfilled areas in "lawn" areas.

5.7.1.2 Aggregate Covers

- Aggregate may be used in areas such as boulevards, driveways, walkways or other paddock areas to comply with landowner requests.

5.7.1.3 Revegetation

- Where appropriate within regional residential yards, revegetation will consist of seeding

as opposed to sod application.

5.7.1.4 Borrow Areas

- The borrow soils to be used as general backfill in residential yards that receive sod application under this RA will meet CSOU cover soil suitability criteria.

5.7.1.5 Construction Transportation Plan

5.7.1.6 Disposal Area

- Soils that are removed from residential yards will be hauled and disposed within an Agency approved Waste Management Area (WMA).

5.7.2 Design and Implementation of Interior/Attic Dust RA Remedy

- Sampling of interior/attic dust will only conducted when requested by the landowner, and then only when an exposure pathway to the attic is evident.

- Only those homes constructed after 1980 will be sampled for interior/attic dust when requested.

- Information on interior and attic dust sampling and remedial activities will be maintained in the GIS.

5.8 Historic Preservation

5.9 Maintenance and Monitoring Procedures

- AR will perform weed management, as necessary, along haul routes disturbed by AR to access remote residences for RA activities.

- With input from landowner, AR will monitor reveg success in areas that are seeded. Supplemental seeding will occur within failed reveg areas, limited to 2 growing seasons time frame.

5.10 Institutional Controls

- All Institutional Controls required pursuant to the 1992 CS OU ROD and the 2013 CS OU ROD Amendment will be addressed in the Institutional Controls Management Plan (ICMP)

5.11 Environmental Monitoring

6.0 DETAILED DESCRIPTION OF REMEDIAL ACTION

6.1 Detailed Description of RA for Residential Soils

- Perform RA sampling at residences within the 2013 CS OU ROD Amendment Area of Concern that were not previously remediated. Existing screening level quality lead data will be utilized to prioritize sampling at residences that have lead values above 400 ppm.

- Following RA sampling, review/evaluate the data for both arsenic and lead and develop an ISWP for each residence requiring RA in those specific residential yards where arsenic area weighted average results are greater than 250 ppm and/or yard component lead results are greater than 400 ppm. RA intervals will be the 0 to 6-inch and 6 to 12-inch depth intervals with a maximum excavation depth of 12-inches.

- Upon completion of RA construction activities, all relevant project data including sampling results, ISWPs, as-built drawings, etc will be uploaded to the CSOU data base for future reference.

6.2 Detailed Description of RA for Interior/Attic Dust

- Perform RA sampling at residences within the SPAOD that have been requested by the landowner and also meet the sampling criteria (exposure pathway to attic exists and home constructed prior to 1980).

- Following RA sampling, review the data and develop an ISWP for each residence requiring RA due to arsenic results greater than 250 ppm and/or lead results greater than 400 ppm.

- Interior dust cleanup consists of professional cleaning service conducting thorough cleaning.

- Attic dust cleanup consists of negative pressure dust removal/disposal followed by encapsulation.

- Upon completion of RA construction activities, all relevant project data including sampling results, ISWPs, as-built drawings, etc. will be uploaded to the CSOU data base for future reference.

7.0 REPORTING AND RECORD KEEPING

7.1 Construction Reporting

- The QA/QC Oversight Representative shall document RA activities on a daily basis.

- Atlantic Richfield shall submit a monthly report summarizing construction activities during performance of the RA.

- Upon completion of all RA activities, a Remedial Action Construction Completion

Report (CCR), which describes the RA work from 2014 on, will be submitted to the Agencies. This document will supplement the initial Residential Soils CCR which was submitted to the Agencies in 2013.

7.2 Record Keeping

- Because of the large number of landowners and land units that may potentially be affected by this RA, the GIS to track all RA activities is a critical component.

- All residential soil and dust sampling data, ISWPs, As-Built Drawings, etc., will be uploaded annually into the GIS (following approval of all information by the agencies). It is anticipated that the GIS will be made available to the local, state, and federal agencies on a continuous basis throughout the entire project.

- All RA data will be provided at the completion of RA for inclusion into the GIS. Upon conclusion of the Residential Soils RA, the CSOU portion of the GIS (residential soils and interior dust) will be finalized and made available to the local, state, and federal agencies.

8.0 REMEDIAL ACTION SCHEDULE

9.0 REFERENCES